

What Is Claimed Is:

1. An isolated nucleic acid molecule comprising a polynucleotide having a nucleotide sequence at least 95% identical to a sequence selected from the group consisting of:

- (a) a nucleotide sequence encoding a polypeptide comprising amino acids from about -40 to about 615 in SEQ ID NO:2;
- (b) a nucleotide sequence encoding a polypeptide comprising amino acids from about -39 to about 615 in SEQ ID NO:2;
- (c) a nucleotide sequence encoding a polypeptide comprising amino acids from about 1 to about 615 in SEQ ID NO:2;
- (d) a nucleotide sequence encoding a polypeptide having the amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209037;
- (e) a nucleotide sequence encoding the mature TR9 polypeptide having the amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209037;
- (f) a nucleotide sequence encoding the TR9 extracellular domain;
- (g) a nucleotide sequence encoding the TR9 transmembrane domain;
- (h) a nucleotide sequence encoding the TR9 intracellular domain;
- (i) a nucleotide sequence encoding the TR9 receptor extracellular and intracellular domains with all or part of the transmembrane domain deleted;
- (j) a nucleotide sequence encoding the TR9 death domain; and
- (k) a nucleotide sequence complementary to any of the nucleotide sequences in (a), (b), (c), (d), (e), (f), (g), (h), (i), or (j).

2. The nucleic acid molecule of claim 1 wherein said polynucleotide has the nucleotide sequence in SEQ ID NO:1.

3. The nucleic acid molecule of claim 1 wherein said polynucleotide has the nucleotide sequence in SEQ ID NO:1 encoding the TR9 receptor having the amino acid sequence in SEQ ID NO:2.

4. The nucleic acid molecule of claim 1 wherein said polynucleotide has the nucleotide sequence in SEQ ID NO:1 encoding the mature TR9 receptor having the amino acid sequence in SEQ ID NO:2.

5. The nucleic acid molecule of claim 1 wherein said polynucleotide has the nucleotide sequence of the cDNA clone contained in ATCC Deposit No. 209037.

6. The nucleic acid molecule of claim 1 wherein said polynucleotide has the nucleotide sequence encoding the TR9 receptor having the amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209037.

7. The nucleic acid molecule of claim 1 wherein said polynucleotide has the nucleotide sequence encoding the mature TR9 receptor having the amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209037.

8. An isolated nucleic acid molecule comprising a polynucleotide which hybridizes under stringent hybridization conditions to a polynucleotide having a nucleotide sequence identical to a nucleotide sequence in (a), (b), (c), (d), (e), (f), (g), (h), (i), (j), or (k) of claim 1 wherein said polynucleotide which hybridizes does not hybridize under stringent hybridization conditions to a polynucleotide having a nucleotide sequence consisting of only A residues or of only T residues.

9. An isolated nucleic acid molecule comprising a polynucleotide which encodes the amino acid sequence of an epitope-bearing portion of a TR9 receptor having an amino acid sequence in (a), (b), (c), (d), (e), (f), (g), (h), (i), or (j) of claim 1.

10. The isolated nucleic acid molecule of claim 9, which encodes an epitope-bearing portion of a TR9 receptor selected from the group consisting of: a polypeptide comprising amino acid residues from about 4 to about 81 in SEQ ID NO:2; a polypeptide comprising amino acid residues from about 116 to about 271 in SEQ ID NO:2; a polypeptide comprising amino acid residues from about 283 to about 308 in SEQ ID NO:2; a polypeptide comprising amino acid residues from about 336 to about 372 in SEQ ID NO:2; a polypeptide comprising amino acid residues from about 393 to about 434 in SEQ ID NO:2; a polypeptide comprising amino acid residues from about 445 to about 559 in SEQ ID NO:2; and a polypeptide comprising amino acid residues from about 571 to about 588 in SEQ ID NO:2.

11. The isolated nucleic acid molecule of claim 1, which encodes the TR9 receptor extracellular domain.

12. The isolated nucleic acid molecule of claim 1, which encodes the TR9 receptor transmembrane domain.

13. The isolated nucleic acid molecule of claim 1, which encodes the TR9 receptor intracellular domain.

14. An isolated nucleic acid molecule comprising a polynucleotide having a sequence at least 95% identical to a sequence selected from the group consisting of:

- (a) the nucleotide sequence of clone HIBEJ86R (SEQ ID NO:6);
- (b) the nucleotide sequence of clone HL1AA79R (SEQ ID NO:7);
- (c) the nucleotide sequence of clone HHFGD57R (SEQ ID NO:8);
- (d) the nucleotide sequence of clone HSABG38R (SEQ ID NO:9);
- (e) the nucleotide sequence of clone HHPDZ31R (SEQ ID NO:10);
- (f) the nucleotide sequence of a portion of the sequence shown in SEQ

ID NO:1 wherein said portion comprises at least 50 contiguous nucleotides from nucleotide 500 to nucleotide 980; and

- (g) a nucleotide sequence complementary to any of the nucleotide sequences in (a), (b), (c), (d), (e), or (f) above.

15. A method for making a recombinant vector comprising inserting an isolated nucleic acid molecule of claim 1 into a vector.

16. A recombinant vector produced by the method of claim 15.

17. A method of making a recombinant host cell comprising introducing the recombinant vector of claim 16 into a host cell.

18. A recombinant host cell produced by the method of claim 17.

19. A recombinant method for producing a TR9 polypeptide, comprising culturing the recombinant host cell of claim 18 under conditions such that said polypeptide is expressed and recovering said polypeptide.

20. An isolated TR9 polypeptide having an amino acid sequence at least 95% identical to a sequence selected from the group consisting of:

- (a) amino acids from about -40 to about 615 in SEQ ID NO:2;
- (b) amino acids from about -39 to about 615 in SEQ ID NO:2;

- (c) amino acids from about 1 to about 615 in SEQ ID NO:2;
- (d) the amino acid sequence of the TR9 polypeptide having the amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209037;
- (e) the amino acid sequence of the mature TR9 polypeptide having the amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209037;
- (f) the amino acid sequence of the TR9 receptor extracellular domain;
- (g) the amino acid sequence of the TR9 receptor transmembrane domain;
- (h) the amino acid sequence of the TR9 receptor intracellular domain;
- (i) the amino acid sequence of the TR9 receptor intracellular and extracellular domains with all or part of the transmembrane domain deleted;
- (j) the amino acid sequence of the TR9 receptor death domain; and
- (k) the amino acid sequence of an epitope-bearing portion of any one of the polypeptides of (a), (b), (c), (d), (e), (f), (g), (h), (i), or (j).

21. An isolated polypeptide comprising an epitope-bearing portion of the TR9 receptor protein, wherein said portion is selected from the group consisting of: a polypeptide comprising amino acid residues from about 4 to about 81 in SEQ ID NO:2; a polypeptide comprising amino acid residues from about 116 to about 271 in SEQ ID NO:2; a polypeptide comprising amino acid residues from about 283 to about 308 in SEQ ID NO:2; a polypeptide comprising amino acid residues from about 336 to about 372 in SEQ ID NO:2; a polypeptide comprising amino acid residues from about 393 to about 434 in SEQ ID NO:2; a polypeptide comprising amino acid residues from about 445 to about 559 in SEQ ID NO:2; and a polypeptide comprising amino acid residues from about 571 to about 588 in SEQ ID NO:2.

22. An isolated antibody that binds specifically to a TR9 receptor polypeptide of claim 20.

23. An isolated nucleic acid molecule comprising a polynucleotide encoding a TR9 receptor polypeptide wherein, except for at least one conservative amino acid substitution, said polypeptide has a sequence selected from the group consisting of:

- (a) a nucleotide sequence encoding a polypeptide comprising amino acids from about -40 to about 615 in SEQ ID NO:2;
- (b) a nucleotide sequence encoding a polypeptide comprising amino acids from about -39 to about 615 in SEQ ID NO:2;

- (c) a nucleotide sequence encoding a polypeptide comprising amino acids from about 1 to about 615 in SEQ ID NO:2;
- (d) a nucleotide sequence encoding a polypeptide having the amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209037;
- (e) a nucleotide sequence encoding the mature TR9 polypeptide having the amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209037;
- (f) a nucleotide sequence encoding the TR9 extracellular domain;
- (g) a nucleotide sequence encoding the TR9 transmembrane domain;
- (h) a nucleotide sequence encoding the TR9 intracellular domain;
- (i) a nucleotide sequence encoding the TR9 receptor extracellular and intracellular domains with all or part of the transmembrane domain deleted;
- (j) a nucleotide sequence encoding the TR9 death domain; and
- (k) a nucleotide sequence complementary to any of the nucleotide sequences in (a), (b), (c), (d), (e), (f), (g), (h), (i), or (j).

24. An isolated TR9 receptor polypeptide wherein, except for at least one conservative amino acid substitution, said polypeptide has a sequence selected from the group consisting of:

- (a) amino acids from about -40 to about 615 in SEQ ID NO:2;
- (b) amino acids from about -39 to about 615 in SEQ ID NO:2;
- (c) amino acids from about 1 to about 615 in SEQ ID NO:2;
- (d) the amino acid sequence of the TR9 polypeptide having the amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209037;
- (e) the amino acid sequence of the mature TR9 polypeptide having the amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209037;
- (f) the amino acid sequence of the TR9 receptor extracellular domain;
- (g) the amino acid sequence of the TR9 receptor transmembrane domain;
- (h) the amino acid sequence of the TR9 receptor intracellular domain;
- (i) the amino acid sequence of the TR9 receptor extracellular and intracellular domains with all or part of the transmembrane domain deleted;
- (j) the amino acid sequence of the TR9 receptor death domain; and
- (k) the amino acid sequence of an epitope-bearing portion of any one of the polypeptides of (a), (b), (c), (d), (e), (f), (g), (h), (i), or (j).